5·68 in the death-rate for 1892, as compared with similar rates in the preceding year. Enteric fever caused 22 admissions and 6 deaths in 1892, rather less than in 1891. The Mauritius is an unhealthy station, but the strength of the garrison being small (560) statistical averages are liable to fluctuations, and are unreliable. The ratios for 1892 compare favourably with those of previous years, still the admission-rate was 1066·0 per 1000, the death-rate 17·86, the invaliding-rate 50·0, and the constantly sick-rate 44·53 per 1000. The sanitary condition of Port Louis is bad; it is highly malarious, and there is a general ignorance, with neglect, of elementary rules of sanitation. The decrease in the admission-rate among the troops as compared with the previous six years is due to the larger proportion of the garrison being quartered in Curepipe.

With regard to the reports from India we may remark that most of the subjects calling for observation have been already anticipated, or will be noticed in our articles on the Report of the Sanitary Commissioner with the Government of India.

DEMONSTRATION OF THE HYDERABAD METHOD OF CHLOROFORM ADMINISTRATION AT THE LONDON HOSPITAL, MAY 25TH, 1894.

BY SURGEON-LIEUTENANT-COLONEL LAWRIE.

THE lecturer having been introduced by Mr. Treves, said:—Gentlemen of the London Hospital Medical College,—I have been most highly honoured by an invitation from Mr. Treves to demonstrate the Hyderabad method of giving chloroform in the London Hospital. This invitation I have accepted with pleasure, and I beg to assure you that it will be regarded by the Nizam as the most gratifying compliment your hospital, the greatest surgical hospital in London, could pay to his Highness's Government, which, as you are aware, has done so much in the cause of humanity.

I present myself before you with mixed feelings and must crave your profound indulgence, for, in the first place, after a residence of over twenty years in India, it is to me an event of the first magnitude to meet a man so distinguished in surgery as Mr. Treves; and, in the second place, I find myself about to address an audience which, from long habit of thought, confirmed by personal observation at your annual gathering the other evening, I can say without any tinge of exaggeration I regard as, in so far as my own profession is concerned, the first audience in the world.

Before I proceed to speak of the action of chloroform I must in a few preliminary remarks ask you to put away from your minds all side issues, such as, for example, the effects of climate, differences between man and animals, the nature of the operations performed in London as compared with Hyderabad, as well as my own personality, and to concentrate your thoughts entirely on the action of the drug. I can tell you nothing new about chloroform, but you will find, if once you become interested in it, that there is something to learn about it every day, and that, just as you never see two cases of tumour precisely alike, so you never meet with two cases of anæsthesia which precisely resemble one another. I have been accused of trying to rob the anæsthesia specialists of their business. This is a narrow-minded and erroneous view. It stands to reason that the more the scope and usefulness of chloroform are extended the more work will there necessarily be for the anæsthetists to do. Lastly, in the course of my short address I shall have frequent occasion to mention the name of Syme. I feel sure, however, from what I have already seen of your healthy devotion to your master in surgery, Mr. Treves, that I shall have your full sympathy in remarks dictated by my devotion to my former master, Mr. Syme.

Our creed about chloroform is a very simple one. The anæsthetic is administered by inhalation, and during the inhalation there are two things to avoid—(1) the inhalation or intake of an overdose, and (2) interference with the breathing. In order to avoid these evils we were taught by Syme, as a matter of common sense, to take the respiration as our guide. In the second place, Syme, following Simpson, quickly discovered that chloroform does not cause failure of the heart prior to failure of the respiration; he therefore taught us that we were not to be guided by the circulation but entirely by the respiration. His words were: "You never see anybody here with his finger on the pulse when chloroform is given." Syme's third principle was never to push chloroform beyond the point when anæsthesia is complete, the signs of complete anæsthesia being stertorous breathing or abolition of the corneal reflex. Having always acted on Syme's principles, we can point to a continuous series of cases of chloroform administration, extending from the year 1847 until the present day, without a death. In this respect I am by no means singular. Hundreds of Syme's pupils, and in a smaller way hundreds of my own pupils, can tell a similar tale. You may say that this merely shows the possibility of giving chloroform in a large number of cases without a fatality. We say that it proves the value and correctness of Syme's principles of chloroform administration, and that it shows clinically—by which I mean up to the limit of anæsthesia—that chloroform has no direct action on the heart. It is one thing, however, to believe oneself that safety under chloroform can be ensured by attending properly to the respiration alone, but it is quite another thing to make other people believe it. The difficulty lies in the fact that a large number of our profession are firmly and honestly convinced, on apparently good grounds, that chloroform does directly affect the heart. Accordingly in 1889 we were called upon to demonstrate the action of chloroform by laboratory experiments, and to decide whether it has or has not a direct action upon the heart, in order to set at rest once for all the question whether it is right or wrong to take the pulse for a guide as to its effects. This led, through the liberality and public spirit of the Nizam's Government, to the appointment of the Hyderabad Commission on Chloroform. I offer you no apology for dwelling briefly upon the work of this Commission, on which I occupied a position which enables me to speak of it without egoism, on the one hand, or reserve, on the other. I agreed in 1889, and I understood at the time that the rest of the profession agreed, to stand or fall, as regards the action of chloroform on the heart, by the results of the Commission's experiments. The only reservation I made was that nothing the Commission could discover would persuade me that I could not give chloroform safely.

At these experiments I was for the most part a spectator. They were performed by Dr. Lauder Brunton and Surgeon-Major Bomford. Dr. Brunton directed the experimental procedures with the self-recording apparatus, which consisted of the ordinary mercurial and glycerine manometers. Surgeon-Major Bomford recorded on the drum every fact, no matter how trivial, as it took place during the time the experiment lasted, and it is this record which gives the experiments their principal and permanent value. Briefly, the experiments of the Hyderabad Commission show (*a*) that the fall of blood-pressure under chloroform, which had, chiefly on the authority of the Glasgow Committee, been up to that time relied upon as the physiological proof *par excellence* of danger to the heart, is in itself harmless and cannot, therefore, be due to cardiac failure; and (*b*) that chloroform anæsthesia alone is absolutely free from risk. It appeared probable, indeed almost certain, from the experiments of the Hyderabad Commission, that the direct fall of blood-pressure under chloroform was altogether vaso-motor, but it could not for various reasons be definitely settled in 1889. This was not enough to satisfy the profession, and we had still to show what the direct fall of blood pressure under chloroform is actually due to, and that the anæsthetic does not ever under any circumstances act upon the heart directly. The proof was completed by Drs. Gaskell and Shore's cross-circulation experiments, which were carried out in Hyderabad in 1892. These experiments proved finally—and you can see the proof for yourselves in the tracings—that when chloroform is sent to the heart alone it produces no effect whatsoever—no anæsthesia, no fall of the blood pressure, and no respiratory failure. On the other hand, when it is sent to the brain and not to the heart it produces its usual well-known effects—namely, lowering of the blood pressure with, first, anæsthesia, then stoppage of the respiration, and then death by failure and arrest of the heart's action. In short, the Hyderabad cross-circulation experiments demonstrate incontestably that the fall of blood pressure, due to the direct action of chloroform, is caused by vaso-motor narcosis and is not due to weakening of the heart.

I must hasten to finish what I have to say to you with the statement of a practical fact and a practical conclusion. The practical fact is that my students can be relied upon to give chloroform with care and safety; and the practical

conclusion is that if I and my students can give chloroform with uniform safety, *a fortiori*—and no one allows this more readily than we do—you can do the same. You can only do it, however, as my men do it, by being taught the right way; and the right way is to give the anæsthetic in such a manner that the breathing is never interfered with, and to altogether ignore the heart and pulse as factors in the administration.

I will only add that I can imagine no greater difficulty in practice than the one which lies before you—viz, to have to abandon the firm conviction that chloroform acts directly upon the heart and to completely alter your principles of chloroformisation; but the men of "the London," with such a surgeon as Mr. Treves at their head, seconded by a man of the calibre of Dr. Hewitt, are not the men I take them to be if they do not conquer this difficulty and bring the question of the administration of chloroform, in the solution of which we in India have played a humble and up to now a distant part, to a successful issue.

Operations by Mr. TREVES.—*Anæsthetic Notes.*—CASE 1: Excision of the Vermiform Appendix.—T. M——, aged forty-eight. Food last taken 6 A.M. to-day. Pulse and respiration immediately before the operation 88 and 24 respectively. Chloroform administered by Dr. Mahomed Abdul Ghany on one of the ordinary Hyderabad caps. The administration was commenced, in one drachm doses applied to the cap at intervals of a minute, at 2h. 27m. 10s. The struggling stage began at 2h. 29m. 43s. and lasted until 2h. 32m. 25s. The cornea became insensitive, and anæsthesia was complete at 2h. 32m. 35s. The anæsthesia was normal and was produced in 5m. 25s. with five drachms of chloroform. During the operation some delay was caused by rigidity of the abdominal muscles. The duration of the operation was 36m. 40s., and the total amount of chloroform employed one ounce.

Operation.—An incision two inches and a half long was made through the abdominal wall and peritoneum over the cæcum, which was exposed and drawn out of the wound, and the appendix was found adherent to and tucked up beneath it. The peritoneal covering having been divided and retracted, the appendix was ligatured with No. 2 silk, about half an inch from its entrance into the cæcum, and cut off. The stump of the appendix was next covered in with the divided peritoneum, held in position by three catgut sutures, and then fixed beneath the peritoneum surrounding the cæcum, which had been cut when the appendix was separated from it. The parietal peritoneum was sutured with a continuous catgut suture, and the operation was completed by free dusting of the wound with iodoform and the application of Tilman's dressing. This patient afterwards did well and had no vomiting.

Anæsthetic Notes.—CASE 2: Nephrectomy.—H. H——, aged twenty-one. Food last taken 10 A.M. to-day. Pulse and respiration immediately before the operation 120 and 32 respectively. Chloroform was administered, as in Case 1, by Dr. Ghany. The administration was commenced in one drachm doses at 3h. 9m. 15s. The struggling stage began at 3h. 11m. 50s. and ended at 3h. 12m. 10s. At 3h. 14m. 0s. the patient vomited a slight amount of food and a quantity of bile, and the cap had to be removed for 50s. The cornea was insensitive, and anæsthesia was complete at 3h. 15m. 30s., and, except that the patient vomited, the anæsthesia was normal and was produced in 6m. 15s. with five drachms of chloroform. As in Case 1, there was occasional rigidity of the abdominal muscles, which interfered with the surgeon's manipulations. The duration of the operation was 37m. 35s., and the total amount of chloroform employed was eleven drachms.

Operation.—The right kidney was exposed by enlarging an old wound which had been made for a previous operation of nephrotomy on Feb. 17th last. The kidney was found enlarged and cystic and was completely surrounded by extremely dense and firm adhesions, which were only detached with great difficulty. The renal vessels and ureters were grasped after considerable trouble with a volsellum and secured with silk, and, the pedicle having been cut through, the kidney was removed. The wound cavity was packed with iodoform gauze.

This patient made an excellent recovery. He vomited after being put to bed and again three times during the night following the operation, but he states that the after-effects of the chloroform were in no other way unpleasant; whereas he vomited for three days and had a bad taste in his mouth and a very severe headache after the former operation on Feb. 17th, when anæsthesia was produced with ether. It is fair to add, however, that the former operation under ether did not relieve him, whereas he was entirely freed from his disease by the second operation under chloroform.

With regard to the anæsthesia Mr. Treves said that he was satisfied with the Hyderabad method of giving chloroform, and that the only objection he had to make to it was that the abdominal muscles were not completely relaxed. This was not the fault of the chloroform. The chloroformist was new to Mr. Treves's methods, and with a little practice under that surgeon he would readily get into the way of producing the complete relaxation which is necessary in operations of the kind performed on the 25th. Both cases were somewhat exceptional. In the first insensibility of the cornea was an unusually early sign of anæsthesia; and in the second case the patient vomited at a time when vomiting under chloroform is extremely rare.

SIR GEORGE BUCHANAN TESTIMONIAL.

IT will be recollected that shortly after Sir George Buchanan's retirement from the post of medical officer to the Local Government Board, which he had held for twelve years, some of his friends and admirers thought the occasion an appropriate one for presenting him with a testimonial in recognition of the admirable way in which he had performed the duties of his office, the excellent service he had rendered to both the scientific and the practical sides of preventive medicine, and his gentlemanly and amiable character, which had endeared him to all who had been brought into direct relation with him. A meeting was held, at which Sir Henry Acland was appointed chairman, Dr. Bristowe treasurer, and Drs. Hamer and Thresh honorary secretaries, and a committee including the above names was appointed to take the whole matter in hand. Within a comparatively short time the pecuniary success of the testimonial fund was assured, and nearly all the subscriptions promised had been paid in. Sir George Buchanan was then communicated with in order to ascertain what views, if any, he might have with respect to the disposal of the fund. He at once repudiated all desire to have the proceeds of the fund expended, in whole or in part, on a present to himself, and expressed an earnest desire that it should be devoted to the foundation of a gold medal to be awarded periodically by the Royal Society (provided they would accept the responsibility) in respect of "distinguished services to hygienic science or practice in the direction either of original research or of professional, administrative, or constructive work." The committee then ascertained informally that under certain conditions there was no doubt of the acceptance. Shortly afterwards Messrs. Pinches, die-sinkers, were interviewed, with the result that it was arranged with them that they should make a die of sufficient size to produce a £20 gold medal, with Sir George Buchanan's portrait on the one side and an allegorical group on the other. Owing to accidental and other circumstances, the production of the die took a very long time, and it is only recently that it has been completed. In accordance with Sir George Buchanan's wishes the die was presented to the Royal Society, together with all the money remaining after paying incidental expenses—the cost of the die and of a gold medal (which the committee had decided to present to Lady Buchanan) and of an illuminated book containing a short address to Sir George Buchanan, and the names of all the subscribers. It was arranged, also, with the Royal Society that the recipient of the gold medal should receive additionally any surplus accruing from the testimonial fund since its previous award. It was well known that Sir George Buchanan had an insuperable objection to display of any kind, and, under these circumstances, it was decided at the last committee meeting that the presentation should be made in private and in the presence only of Sir Henry Acland, Dr. Bristowe, and Drs. Hamer and Thresh. This took place on the afternoon of Wednesday, May 23rd, at Dr. Bristowe's residence, the above gentlemen being present, together with Sir George and Lady Buchanan. Sir Henry Acland occupied the chair and made a very graceful and appreciative speech, in the course of which he explained all that had happened, and especially that the die (together with £276 12*s.*) had been handed over to the Royal Society and had been accepted